

**CLAIMS**

**What is claimed is:**

1. A method of printing to a label media based on a position of the label media, the method comprising:

5 positioning the media in an initial position;

moving the media from the initial position:

moving the media from the initial position;

tracking the movement of the media using an encoder; and

printing to the label media using a printhead based on the tracking of the

movement of the media.

2. The method of claim 1 wherein tracking the movement of the media includes generating optical reflections within the encoder and interrupting the optical reflections when the label media advances an incremental length.

3. The method of claim 1 wherein tracking the movement of the media further includes:

sending an interrupt signal from the encoder to a controller when the optical reflections are interrupted and, upon receiving the interrupt signal, the controller firing the printhead of the printer.

4. The method of claim 1 wherein the printhead is a thermal printhead.

5. The method of claim 1 wherein the tracking step further includes:

20

rotating an encoder shaft as the media moves thereover; and

monitoring the rotation of the encoder shaft with the encoder.

1

6. The method of claim 5 wherein the encoder shaft includes an encoder traction roller that is securelyly affixed to, so as to rotate along with, the encoder shaft, and wherein the label media rotates the encoder traction roller.

7. The method of claim 5 wherein the encoder shaft includes an encoder traction portion and wherein the label media rotates the portion.

5

8. The method of claim 2 wherein the incremental length is 1/300th of an inch.

9. The method of claim 3 wherein the encoder is a rotary-to-digital encoder.

10. The method of claim 6 further comprising:  
providing an encoder lift cam, an encoder lift bracket for contacting engagement with the encoder lift cam, and an encoder pivot bracket connected to the encoder shaft and in interlocking engagement with the encoder lift bracket;  
prior to printing, engaging the encoder lift bracket with the encoder lift cam; and  
prior to printing, engaging the encoder lift bracket with the encoder pivot bracket.

11. The method of claim 10 further comprising pivoting the encoder shaft to  
15 disengage the encoder traction roller out of contact from the label media following printing to the label media.

12. The method of claim 10 further comprising pivoting the encoder shaft to engage the encoder traction roller so as to contact the label media prior to printing to the label media.

13. The method of claim 3 wherein the interrupt signal sent to the encoder is indicative of actual media distance traveled.

14. A encoder-based method of controlling printhead firing in a label printer, the method comprising:

5 programming a controller to receive an interrupt signal from a rotary-to-digital position feedback encoder; and

generating a print signal to be sent to the printhead based on the interrupt signal, thereby controlling printhead firing in the label printer.

15. A method of printing to a label media based on a position of the label media, the method comprising:

positioning the media in an initial position;  
moving the media from the initial position;  
tracking the movement of the media using an encoder by rotating an encoder shaft as the media moves thereover and monitoring the rotation of the encoder shaft with the encoder;

15 sending an interrupt signal to a controller when the rotation of the encoder shaft interrupts encoder optical reflections;

controlling, with a controller programmed to receive the interrupt signal from the encoder, printhead printing by generating a print signal to be sent to the printhead based on the interrupt signal; and

printing to the label media using a printhead based on the tracking of the movement of the media.

16. A media positioning and printing system comprising:

a printhead assembly having a printhead;

5 a controller for controlling firing of the printhead;

a label media to be printed to by the firing of the printhead; and

an encoder system in operational association with the printhead assembly, the encoder system including an encoder shaft having an encoder traction roller securably attached to the encoder shaft, the label media riding along the encoder traction roller, and an encoder

10 attached to the encoder shaft for monitoring the rotation of the encoder shaft and transmitting a signal to the controller, the encoder including an optical source, an optical detector and a reflective optical disk that rotates with the encoder shaft, the reflective optical disk having a reflective pattern, the optical source generating an optical signal, and the reflective optical disk reflecting the optical signal back to the optical detector, the reflective pattern having non-reflective spaces, the optical detector not receiving a reflected optical signal when the optical signal hits the non-reflective spaces of the optical disk, thereby interrupting the optical signal;

15 wherein, when the encoder shaft rotates, the encoder optical signal is alternately reflected and interrupted so as create a signal interruption, and when the optical signal is interrupted, each resulting signal interruption corresponding to a label media travel distance, the encoder sends a signal to the controller and the controller, based on the signal from the encoder, sends a firing signal to the printhead to fire the printhead in order to effect printing of the label media based on the label media travel distance.

17. The system of claim 16 wherein the label media travel distance is approximately 1/300th of an inch.

18. The system of claim 16 wherein the encoder is a rotary-to-digital encoder.

19. The system of claim 16 wherein the rotation of the encoder shaft corresponds to 5 an angular displacement that is read by the encoder and translated into a digital signal that is sent to the controller.

20. A method of determining the position of a media, the method comprising:  
tracking, using an encoder, an actual media position in tracking increments,  
thereby establishing an encoder-based tracking of actual media position; and  
firing a thermal printhead associated with the media based on the encoder-based tracking of the actual media position using the tracking increments.

21. The method of claim 20 further including the encoder sending an encoder interrupt signal to fire the printhead to print to the media based on the actual media position.

22. A method of determining a media travel distance for printing purposes, the 15 method comprising:

monitoring the media travel distance; and  
firing a printhead for printing to the media based on the media travel distance.

23. The method of claim 22 wherein the monitoring of the media is not accomplished through use of a motor that controls the media travel distance.

24. The method of 23 further comprising translating the media position into electrical outputs so as to determine appropriate printing to the media.

25. A method of printing in a label printer, the method comprising:  
providing an encoder, an encoder shaft connected to the encoder, a printhead for

5 printing, and a controller for controlling the encoder and the printhead;  
rotating the encoder shaft to generate an encoder shaft rotation;  
optically monitoring the rotation of the encoder shaft;  
generating an optical signal within the encoder;  
interrupting the optical signal based on the rotation of the encoder shaft;  
sending a signal from the encoder to the controller based on the interruption of the  
optical signal;  
sending a printhead firing signal from the controller to the printhead to print; and  
firing the printhead based on the printhead firing signal sent from the controller to  
the printhead.

26. A method of printing to a media comprising:

passing the media over an encoder traction roller, the encoder traction roller  
connected to an encoder shaft;  
rotating the encoder shaft as a result of the media travelling over the encoder  
traction roller;  
20 monitoring the rotation of the encoder shaft with an encoder; and  
firing a printhead based upon the monitoring of the rotation of the encoder shaft.

27. The method of claim 26 wherein, within the encoder, monitoring the rotation of the encoder shaft includes:

generating an optical signal ;

reflecting the optical signal; and

interrupting the reflected optical signal based on the rotation of the encoder shaft.

5            28. A media positioning and printing system for use with a label media comprising:

a printhead assembly having a printhead;

a controller for controlling firing of the printhead; and

an encoder system in operational association with the printhead assembly, the

40            encoder system including an encoder shaft having an encoder traction roller securably attached to the encoder shaft, the label media riding along the encoder traction roller, and an encoder attached to the encoder shaft for monitoring the rotation of the encoder shaft and transmitting a signal to the controller, the encoder including an optical source, an optical detector and a reflective optical disk that rotates with the encoder shaft, the reflective optical disk having a reflective pattern, the optical source generating an optical signal, and the reflective optical disk reflecting the optical signal back to the optical detector, the reflective pattern having non-reflective spaces, the optical detector not receiving a reflected optical signal when the optical signal hits the non-reflective spaces of the optical disk, thereby interrupting the optical signal;

45            wherein, when the encoder shaft rotates, the encoder optical signal is alternately reflected and interrupted so as create a signal interruption, and when the optical signal is interrupted, each resulting signal interruption corresponding to a label media travel distance, the encoder sends a signal to the controller and the controller, based on the signal from the encoder,

50

55

60

65

70

75

80

85

90

95

sends a firing signal to the printhead to fire the printhead in order to effect printing of the label media based on the label media travel distance.

PRINTING ENGINE